

Claims:

[0063] 1. A method for delivering a polynucleotide into a human stem cell, said method comprising the steps of:

associating the polynucleotide to a human sperm cell through a linker; and

effecting *in vitro* fertilization of a human oocyte with the human sperm cell to form a zygote.

[0064] 2. The method in claim 1 further comprises culturing and establishing an embryonic stem cell from the zygote

[0065] 3. The method in claim 2 further comprises:

screening cells derived from the embryonic stem cell for immunological compatibility with a patient.

[0066] 4. The method in claim 2 wherein the embryonic stem cell has the ability to differentiate into different cell types selected from the group consisting of: myoblasts, hematopoietic stem cells, and neural stem cells.

[0067] 5. The method in claim 1 wherein the polynucleotide is able to express a gene product selected from a group consisting of an RNA or a protein.

[0068] 6. The method in claim 1 wherein the polynucleotide is associated with an external surface of the human sperm cell through the linker.

[0069] 7. The method in claim 1 wherein the linker is an antibody.

[0070] 8. A vector comprising:

a human sperm cell; and

a polynucleotide linked to the human sperm cell through a linker.

[0071] 9. The vector in claim 8 wherein the polynucleotide is introduced into a human oocyte during fertilization by the human sperm cell.

[0072] 10. The vector in claim 8 further comprising an embryonic stem cell derived from fertilization of the human sperm cell with a human oocyte.

[0073] 11. The vector in claim 8 wherein the polynucleotide is able to express a gene product selected from a group consisting of an RNA or a protein.

[0074] 12. The vector in claim 8 wherein the polynucleotide is associated to an external surface of the human sperm cell through the linker.

[0075] 13. The method in claim 8 wherein the linker is an antibody.

[0076] 14. An embryonic stem cell derived from fertilization of a human oocyte with a human sperm cell linked to a polynucleotide through a linker.

[0077] 15. The embryonic stem cell in claim 14 wherein the embryonic stem cell is immunologically compatible with a patient.

[0078] 16. The embryonic stem cell in claim 14 wherein the human sperm cell and the human oocyte are derived from biological parents of the patient.

[0079] 17. The embryonic stem cell in claim 14 wherein the polynucleotide is able to express a gene product selected from a group consisting of an RNA and a protein.

[0080] 18. The embryonic stem cell in claim 14 wherein the embryonic stem cell has the ability to differentiate into different types of cells.

[0081] 19. The embryonic stem cells in claim 18 wherein the different types of cells are selected from a group consisting of myoblasts, hematopoietic stem cells, and neural stem cells.

[0082] 20. The embryonic stem cells in claim 14 the polynucleotide is linked to an external surface of the human sperm cell.

[0083] 21. The embryonic stem cells in claim 14 wherein the linker is an antibody.

[0084] ²² 22. An antibody characterized by having binding affinity to a sperm cell and wherein a sperm cell bound antibody retains the ability to fertilize an oocyte.

[0085] 23. The antibody in claim 22 wherein the sperm cell is a human sperm cell.

[0086] ²⁴ 24. The antibody in claim 22 wherein the sperm cell is selected from a group consisting of mouse sperm cell, cow sperm cell, pig sperm cell, chicken sperm cell, sheep sperm cell, and goat sperm cell.

[0087] 25. The antibody in claim 22 wherein the binding affinity to sperm cells is further characterized by the ability to bind to sperm cells from a plurality of species of animal.

[0088] 26. The antibody in claim 22 also exhibiting binding properties to a polynucleotide such that upon fertilization, the polynucleotide is introduced into the zygote.